

**PATENT ABSTRACTS OF JAPAN**

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UZUHASHI YUJI**(54) PASTE FOR ASSISTING FOOD INTAKE OF PERSON DIFFICULT IN MASTICATION OR DEGLUTITION****(57)Abstract:**

**PROBLEM TO BE SOLVED:** To obtain the subject paste capable of being added to foods for people difficult in mastication or deglutition for the prevention of error deglutition, capable of simply expressing the thickening or coagulation of the foods, capable of controlling the thickening or coagulation, and capable of providing the slightly adhesive foods without changing the pasty touches and tastes of the foods by including a specified substance such as gellant gum or carrageenan.

**SOLUTION:** This paste contains at least one of substance selected from gellant gum, carrageenan, furcellaran, xanthan gum, devil's tongue mannan, Locust bean gum, Tara gum, psyllium seed gum, sodium alginate, pectin, methylcellulose, carboxymethylcellulose, tamarind gum and Azotobactor vinelandii gum. Native gellant gum having a total cation concentration of  $\leq 6$  wt.%, sodium-copper type, sodium-iota type and/or sodium-lambda type carrageenans, etc., are particularly preferable amount the substances.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] It is drawing showing cation concentration for the hydration time amount of native mold gellant gum, and the relation of the viscosity obtained as rose meter.

[Drawing 2] It is drawing showing cation concentration for the hydration time amount of lambda mold carrageenan, and the relation of the viscosity obtained as a parameter.

[Drawing 3] It is drawing showing the hydration time amount of xanthan gum, and the relation of the viscosity obtained as compared with the case of guar gum and alpha-ized starch.

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the thickening agent added by food as coagulation or an object for thickening for misswallowing prevention of the patient who became digestion and dysphagia according to the eating disorder, and elderly people.

[0002]

[Description of the Prior Art] The action for alimentation required for human life support and an activity of "eating food" is action most important for human being that a cerebrum activity called the appetite which not only the semantics of energy supply but the taste, the sense of smell, vision, a tactile sense (mouthfeel), etc. bring about intervened. The failure (eating disorder) of an action important for this human being of "eating food" is increasing in recent years with progress of an aging society. For example, it is an eating disorder by the deficit of the tooth of the cerebrovascular disease (cerebral apoplexy), progressive dystrophy \*\*, amyotrophic lateral sclerosis, sensory disturbance, and elderly people, decrease of the paramyotonia, the swelling by inflammation, the neoplasm, a tracheotomy, etc. The organs which manage human food intake and deglutition are also a part of respiratory organs and articulation organ. For this reason, since an eating disorder may be concerned with the crisis of a lifting and a life in pneumonia, suffocation, etc. by misswallowing with original nutritional disorder, it poses a very important problem.

[0003] From such a situation, the interest about the food for - deglutition training for care to the patient and elderly people who became digestion and dysphagia is increasing in recent years. Formation of the bolus worsens by dyskinesia, such as a lip, a tongue, the palate, and the pharynx, sending onto the pharynx and an esophagus from the oral cavity worsens, and the patient and elderly people who became digestion and dysphagia are further accompanied by a fall and delay of a deglutition reflex. Therefore, without that elasticity is not strong, a liquid, and a solid-state dissociating as an important element required of the food digestion and for dysphagia persons, it does not become scattering but it is mentioned that description is uniform, that coherent is good, that there is little adhesion to membrane and slipping is good, etc.

[0004] Recently, the technique of making it thickening or making food of the patient and elderly people who became digestion and dysphagia solidifying so that the above-mentioned demand may be filled is developed. For example, it is the approach of carrying out the heating dissolution of the coagulants which make food add, heat and thicken starch, such as a cone and a potato, such as an approach, gelatin, and an agar, and carrying out cooling coagulation in addition to food etc. Furthermore, how to alpha-ize starch as an option using a simpler thickening adjuvant, and change into water solubility, the method of making food add and thicken guar gum with water solubility with the seed of the vegetation of the pulse family, etc. are considered.

[0005] In order to hold down a health care cost, the human and material care to care, a therapy, and training of a patient with difficult digestion and deglutition is stopping being prudent, while an aging society is greeted and digestion and a dysphagia person increase rapidly. For this reason, the food offered simpler as the object for care to digestion and a dysphagia person or an object for food intake training is called for. However, the taste will be sacrificed, when it is difficult to give width of face to a menu if provided as goods with which such food was also completed and it takes into consideration the stability (quality, stability from microorganism growth, etc.) of goods with time. Furthermore, the cost of food will also become high if a packing material is included. If these situations are taken into consideration, when eating the strong food of a certain acidity or alkalinity from before, it is effective to make it thicken secondarily

or to make it solidify.

[0006] In this case, the conditions demanded as a thickening agent which makes the strong food of acidity or alkalinity thicken or solidify secondarily are as follows.

\*\* Making suitable thickening and the coagulation for food discover, the thing which adjustment of thickening or coagulation hears according to the degree of the failure of digestion and a dysphagia person further.

\*\* It is the thickening agent which is missing from a mixer, breaks down elasticity, does not send a feeling of pastiness to mouthfeel, does not change the taste of food when changing mouthfeel for what strengthened acidity or alkalinity by thickening or coagulation, but can be enjoyed by the taste or the sense of smell.

\*\* Be improved so that coherent [ of food ] becomes high and slipping becomes [ adhesion ] few well.

\*\* It can be used simple and the manifestation of thickening or coagulation be prompt.

[0007]

[Problem(s) to be Solved by the Invention] There is nothing that fully fills such conditions with the conventional approach. For example, the heating dissolution of the coagulants, such as gelatin and an agar, is carried out, and it adds for food, and the approach of carrying out cooling coagulation may not be enough for adjustment of \*\*, and especially gelatin has the fault which shows change that the coagulation force becomes strong with time by it. Moreover, since gelatin has the so-called gelatin smell, it does not suit the conditions of \*\*. Since heating, cooling, etc. are required, the simple nature of \*\* is also missing.

[0008] In order to give the thickening nature which lacks in the simple nature of \*\* since heating is required, and is made into the purpose, operating concentration becomes high, a feeling of pastiness appears in mouthfeel, and the method of making starch, such as a cone and a potato, add, heat and thicken wraps in the taste, and does not fulfill the conditions of \*\*, either. Furthermore, since a feeling of pastiness is strong and it is adhesive, it does not agree on the conditions of \*\*. Since there is aging of starch with time, the conditions of \*\* are not enough, either. Since what alpha-ized starch and was changed into water solubility, and the method of making guar gum with water solubility add and thicken with the vegetable seed of the pulse family wrap in the taste too, and do not fulfill the conditions of \*\* but are [ a feeling of a paste is strong and ] adhesive, they do not suit the conditions of \*\*, either. Moreover, when making this approach thicken in addition to the last food, its manifestation of thickening is slow, and at the time of a food intake, alpha-ized starch has further the fault that viscosity is changing, and the fault that age by every structure and viscosity falls.

[0009] Thickening and coagulation are made to discover simple, this invention is easy also for adjustment of thickening or coagulation, is a thickening agent added for misswallowing prevention for the food of digestion and a dysphagia person, and aims at offering the thickening agent which made it possible to offer little adhesive food, without bringing about change of a feeling of pastiness, or the taste.

[0010]

[Means for Solving the Problem] the thickening agent by which this invention is added by the food of digestion and a dysphagia person for misswallowing prevention -- it is -- gellant gum, carrageenan, a furcellaran, xanthan gum, konjak mannan, locust bean gum, and a tare -- it is characterized by the thing which was chosen from gum, a psyllium seed gum, sodium alginate, pectin, methyl cellulose, carboxyl methyl cellulose, tamarind gum, and azotobacter BINERANJIGAMU and which contain a kind at least. This invention is a thickening agent added by the food of digestion and a dysphagia person for misswallowing prevention again, and it is characterized by using as the main raw material the gellant gum by which the cation content was stopped to 6.0 or less % of the weight. The gellant gum used here is preferably characterized by being a native mold. It is characterized by this invention using as the main raw material further the carrageenan that subject of whose it is the thickening agent added by the food of digestion and a dysphagia person for misswallowing prevention, and is a sodium IOTA mold, a sodium kappa mold, a sodium lambda mold, or these mixture. This invention is a thickening agent added by the food of digestion and a dysphagia person for misswallowing prevention further, and while reducing the stringiness of a water solution by heat-treating in the state of powder, it is characterized by using as the main raw material the xanthan gum which reforms and becomes so that it may have the viscosity of 1200 or more cps in the temperature of 25 degrees C in the water solution of 1% of concentration. This invention is a thickening agent added by the food of digestion and a dysphagia person for misswallowing prevention further. Gellant gum, carrageenan, xanthan gum, and sodium alginate, Pectin, methyl cellulose, carboxyl methyl cellulose, azotobacter BINERANJIGAMU, konjak mannan and a tare -- gum, tamarind gum, and a furcellaran -- It is characterized by the thing as which it was chosen from locust bean gum and a psyllium

seed gum and which is prepared so that may contain a kind at least, it may add for food, it may dissolve within 10 minutes and desired coagulation or desired thickening may be discovered. In this invention, the thickening agent shall be granulated preferably. According to this invention, condition \*\* mentioned previously - \*\* can fully be filled as a thickening agent for making the meal of a patient and elderly people with difficult digestion and deglutition thicken or solidify secondarily because of miswallowing prevention.

[0011]

[Embodiment of the Invention] The 1st desirable thickening agent for making the food for - deglutition training for care to the patient and elderly people who became digestion and dysphagia according to the eating disorder thicken or solidify is gellant gum produced using *Pseudomonas elodea*. It is water-soluble polysaccharide, and it dissolves in hot water and gellant gum becomes random coil-like, it cools, and takes and gels double helix structure. Therefore, it was the basis which heating is the conditions of the dissolution known conventionally and is hard to hydrate like an agar etc. at the time of cold water. In addition, in this specification, "hydration" means the swelling and the property of which are dissolved and thickening and gelation are done which absorb water. However, according to this invention person's etc. examination, it became clear to absorb water and hydrate in cold water for a short time by controlling cation sum total contents, such as sodium which exists in gellant gum, a potassium, calcium, and magnesium.

Moreover, the physical properties of food are also changeable from thickening to coagulation with the content of gellant gum. Furthermore, sodium, a potassium, calcium, and magnesium can be added to the gellant gum by which hydration was carried out using reactivity with the cation of gellant gum, and it can be made to gel further.

[0012] It is more preferably more effective [ the sum density of cations, such as sodium in gellant gum, a potassium, calcium, and magnesium, / the sum density of bivalence ion ] still 6.0 or less % of the weight preferably among cations to stop to 0.5 or less % of the weight for hydration 3.0 or less % of the weight. Especially, the gellant gum of a native mold is desirable for the hydration to cold water also in gellant gum. Drawing 1 shows cation concentration for the hydration time amount in the cold water of native mold gellant gum (0.5 % of the weight), and the relation of the viscosity obtained as a parameter. The feeling of pastiness like [ at the time of using the conventional thickening agent ] does not come out, and the object for care of the digestion and the dysphagia person who added such gellant gum, or the food for deglutition training does not have change of the taste, and can enjoy the taste of original food. Moreover, the hydration in cold water becomes easy, hydration time amount is also short compared with the conventional thing, and simple use is possible for it so that clearly from drawing 1 .

[0013] The 2nd desirable thickening agent for making the food for - deglutition training for care to the patient and elderly people who became digestion and dysphagia according to the eating disorder thicken or solidify is carrageenan extracted from red algae. Moreover, a furcellaran similar to carrageenan is also effective. Carrageenan is water-soluble polysaccharide, a kappa type and an IOTA type dissolve in hot water, become random coil-like, and it cools, and they take and gel double helix structure. Therefore, in order to form gel, heating like an agar were the conditions of the dissolution known conventionally. However, according to this invention person's etc. examination, it became clear by controlling the total quantity of the potassium in carrageenan, calcium, and magnesium ion to 5.0 or less % of the weight that the hydration to cold water becomes good. It is desirable to manufacture as carrageenan of a sodium mold for that purpose. The lessened thing which the ion exchange was carried out [ thing ] with ion exchange resin, and decreased the potassium, the calcium, and the magnesium ion in carrageenan more preferably is good. Thus, hydrating the principal part of carrageenan in cold water for a short time by considering as a sodium kappa mold, a sodium IOTA mold, a sodium lambda mold, or these mixture was found out.

[0014] Especially the carrageenan of a kappa mold or an IOTA mold has the coagulation force from the first. Therefore, after dissolving this in cold water as carrageenan of a sodium mold, the coagulation degree of arbitration can be obtained by adding a cation and milk protein further. Drawing 2 shows cation concentration for the hydration time amount in the cold water of lambda mold carrageenan (2.0 % of the weight), and the relation of the viscosity obtained as a parameter. moreover, the locust bean gum which has this and reactivity in carrageenan, konjak mannan, and a tare -- the coagulation force can obtain increase and still more desirable gel by using together with gum etc. Furthermore, by mixing and carrying out a coincidence extract and carrying out dehydration desiccation in a raw material phase, combining these suitably, use is simple and a thickening agent with the high coagulation force with sufficient hydration is obtained. The feeling of pastiness like [ at the time of using the conventional thickening agent ] does not come out, and the object for care of the digestion and the dysphagia person who added such carrageenan, or the food for deglutition training does not have change of the taste, and can enjoy the taste of original food. Moreover, the hydration

in cold water becomes easy, hydration time amount is also short compared with the conventional thing, and simple use is possible for it so that clearly from drawing 2 .

[0015] The 3rd desirable thickening agent for making the food for - deglutition training for care to the patient and elderly people who became digestion and dysphagia according to the eating disorder thicken or solidify is xanthan gum produced from *Xanthomonas campestris*. Xanthan gum is water-soluble polysaccharide, dissolves in cold water and shows the viscosity of shoe Doppler stick nature. Although conventional xanthan gum is also effective, while reducing the stringiness of a water solution by heat treating in the state of powder especially according to the examination results, such as this invention person, it is desirable to use as the main raw material the xanthan gum which reforms and becomes so that it may have the viscosity of 1200 or more cp in the temperature of 25 degrees C in the water solution of 1% of concentration. About such reforming xanthan gum, these people have proposed in Japanese Patent Application No. No. 193055 [ eight to ] previously.

[0016] furthermore, such xanthan gum, locust bean gum, konjak mannan, and a tare -- by using gum etc. together, it can be made to be able to solidify and the degree of coagulation can also be adjusted to arbitration. Furthermore, by mixing and carrying out a coincidence extract and carrying out dehydration desiccation in a raw material phase, combining these suitably, use is simple and a thickening agent with the high coagulation force with sufficient hydration is obtained. the reforming xanthan gum (0.5 % of the weight) and reforming xanthan gum which drawing 3 mentioned above, and a tare -- the hydration time amount in the cold water of gum (a total of 0.5 % of the weight) and the viscosity obtained are shown. The case of guar gum (0.7 % of the weight) and alpha-ized starch (6 % of the weight) is collectively shown in drawing as an example of a comparison. The feeling of pastiness like [ at the time of using the conventional thickening agent ] does not come out, and the object for care of the digestion and the dysphagia person who added such xanthan gum, or the food for deglutition training does not have change of the taste, and can enjoy the taste of original food. Moreover, the hydration time amount in cold water is short compared with guar gum or alpha-ized starch, and simple use is possible so that clearly from drawing 3 .

[0017] The 4th desirable thickening agent for making the food for - deglutition training for care to the patient and elderly people who became digestion and dysphagia according to the eating disorder thicken or solidify is konjak mannan made from a konnyaku potato. Water absorbing power is a powerful base material with sufficient bloating tendency, and konjak mannan absorbs water, works as a thickener by low concentration, and becomes the gel by raising concentration. In order to make it suit for the purpose of this invention, it is also effective to carry out extract purification of the konjak mannan further, to perform alcoholic washing, and to make grain size detailed, and to raise water absorption bloating tendency. Furthermore, the coagulation force can obtain increase and more desirable gel by using carrageenan and xanthan gum together with such konjak mannan. The feeling of pastiness like [ at the time of using the conventional thickening agent ] does not come out, and the object for care of the digestion and the dysphagia person who added such konjak mannan, or the food for deglutition training does not have change of the taste, and can enjoy the taste of original food. Moreover, the hydration in cold water becomes easy, hydration time amount is also short compared with the conventional thing, and simple use is possible for it.

[0018] The 5th desirable thickening agent for making the food for - deglutition training for care to the patient and elderly people who became digestion and dysphagia according to the eating disorder thicken or solidify is pectin contained in fruits or vegetables. Pectin is water-soluble polysaccharide which uses as a principal component the polygalacturonic acid methyl-ester-ized partially, and it dissolves in cold water and it discovers viscosity. Moreover, the low low methoxyl pectin of whenever [ esterification ] has the property which reacts with calcium ion and makes gel. And by using pectin, the feeling of pastiness like [ at the time of using the conventional thickening agent ] cannot come out, but the taste of original food can be enjoyed. Especially the low high methoxyl pectin (for example, commercial Hercules Indanthrene dead) of calcium reactivity is inferior to solubility compared with a high methoxyl pectin, and will be in the desirable condition for carrying out swelling hydration rather than the dissolution, and making the food for - deglutition training for care thicken or solidify in cold water. Moreover, it can also be made to gel by adding cations, such as calcium ion, to the pectin by which hydration was carried out. Thus, it hydrates with cold water, and hydration time amount of pectin is also short compared with the conventional thing, and easy use is possible for it.

[0019] Preferably, as granularity, the thickening agent mentioned above is paid to a small bag, and is offered in the form attached to the liquefied food for - deglutition training for care of a patient and elderly people. locust bean gum besides the thickening agent mentioned above, and a tare -- gum, a psyllium seed gum, sodium alginate, methyl cellulose, carboxyl methyl cellulose, tamarind gum, etc. are effective as a thickening agent which becomes digestion

and dysphagia according to an eating disorder, and is similarly added for the food for - deglutition training for care to a patient and elderly people.

[0020]

[Effect of the Invention] According to this invention, as stated above, are the thickening agent added for misswallowing prevention for the food of digestion and a dysphagia person, and thickening and coagulation are made to discover simple, adjustment of thickening or coagulation is also easy, and the thickening agent which made it possible to offer little adhesive food can be offered, without bringing about change of a feeling of pastiness, or the taste.

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**CLAIMS**

[Claim(s)]

[Claim 1] the thickening agent added by the food of digestion and a dysphagia person for misswallowing prevention -- it is -- gellant gum, carrageenan, a furcellaran, xanthan gum, konjak mannan, locust bean gum, and a tare -- the thickening agent characterized by the thing which was chosen from gum, a psyllium seed gum, sodium alginate, pectin, methyl cellulose, carboxyl methyl cellulose, tamarind gum, and azotobacter BINNERANJIGAMU, and which contain a kind at least.

[Claim 2] The thickening agent which is a thickening agent added by the food of digestion and a dysphagia person for misswallowing prevention, and is characterized by using as the main raw material the gellant gum by which the cation content was stopped to 6.0 or less % of the weight.

[Claim 3] The thickening agent according to claim 2 characterized by gellant gum being a native mold.

[Claim 4] The thickening agent characterized by using as the main raw material the carrageenan the subject of whose it is the thickening agent added by the food of digestion and a dysphagia person for misswallowing prevention, and is a sodium IOTA mold, a sodium kappa mold, a sodium lambda mold, or these mixture.

[Claim 5] The thickening agent which is a thickening agent added by the food of digestion and a dysphagia person for misswallowing prevention, and is characterized by using as the main raw material the xanthan gum which reforms and becomes so that it may have the viscosity of 1200 or more cps in the temperature of 25 degrees C in the water solution of 1% of concentration while reducing the stringiness of a water solution by heat-treating in the state of powder.

[Claim 6] it is the thickening agent added by the food of digestion and a dysphagia person for misswallowing prevention, and was chosen from carrageenan and xanthan gum -- at least -- a kind, konjak mannan and locust bean gum, and a tare -- the thickening agent characterized by coming to combine a kind at least, and carrying out dehydration desiccation after [ which mixed and carried out the coincidence extract in the phase of a raw material ] being chosen from gums.

[Claim 7] the thickening agent added by the food of digestion and a dysphagia person for misswallowing prevention -- it is -- gellant gum, carrageenan, xanthan gum, sodium alginate, pectin, methyl cellulose, carboxyl methyl cellulose, azotobacter BINNERANJIGAMU, konjak mannan, and a tare -- the thickening agent characterized by the thing as which it was chosen from gum, tamarind gum, a furcellaran, locust bean gum, and a psyllium seed gum, and which is prepared so that may contain a kind at least, it may add for food it may dissolve within 10 minutes and desired coagulation or desired thickening may be discovered.

[Claim 8] The thickening agent according to claim 1 to 7 characterized by being granulated.

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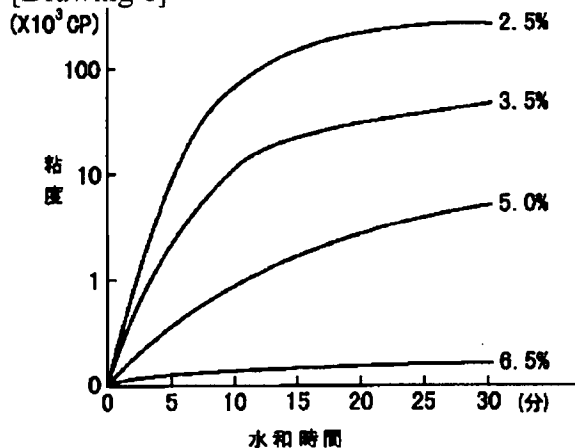
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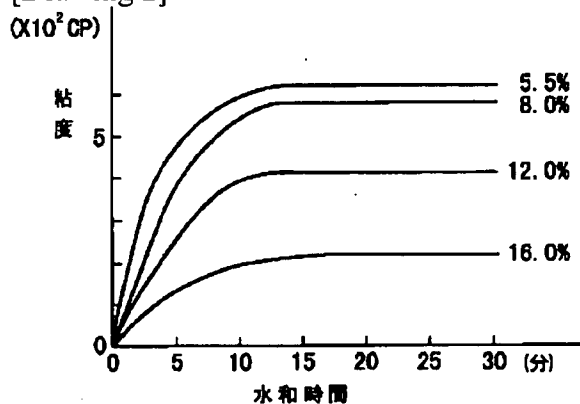
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## DRAWINGS

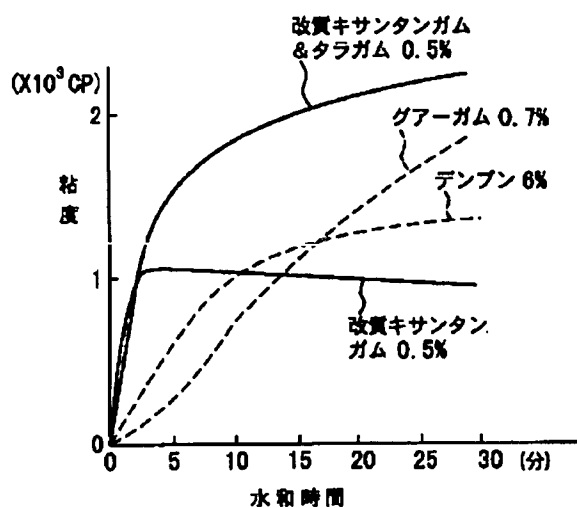
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Translation done.]